UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,568	09/19/2003	William F. McNally	7668-4	8606

30448 7590 04/27/2007

AKERMAN SENTERFITT
P.O. BOX 3188
WEST PALM BEACH, FL 33402-3188

EXAMINER	
BAREFORD, KATHERINE A	
ART UNIT	PAPER NUMBER
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/666,568	MCNALLY ET AL.	
	Examiner	Art Unit	
	Katherine A. Bareford	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *4,5 and 14-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 6-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/07*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *attached*.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 9, 2007 has been entered.

The amendment filed with the RCE submission of April 9, 2007 has been received and entered. With the amendment, claims 4-5 and 14-19 remain withdrawn and claims 1-3 and 6-13 are pending for examination.

Claim Rejections - 35 USC § 112

2. The rejection of claims 1-3 and 6-13 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn due to the amendment of April 9, 2007 removing the material indicated as new matter in the Office Action of November 7, 2006.

3. The rejection of claim 13 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to the amendment to claim 1 to clarify the use of "the Na_4EDTA solution".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 2 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabara et al (US 5302415) in view of Arcilesi et al (US 4204013) and Sanders et al (US 4716055).

Referring to claim 1, Gabara et al. discloses a method for coating an organic substrate such as aramid fibers with metal (column 2, lines 5-20), which can include cleaning (preparing) the fibers before treatment (column 6, lines 20-30). Gabara et al then teaches etching the fibers by placing them in a sulfuric acid solution (column 3, line 35 through column 4, line 15). To coat the fibers with silver, they can then be sensitized by placing in a solution comprising stannous chloride and inorganic HCL acid (column 5, lines 1-10), then the substrate was placed in a silver salt solution which inherently deposits silver oxide on the organic substrate as no reducing agent is present and the solution further includes ammonium hydroxide as a complexing agent (column 5, lines 1-20 and column 8, lines 40-65), the solution then has a reducing agent added which acts to reduce the silver oxide to metallic silver (column 5, lines 1-20 and column 8, lines 39-64).

(1) Gabara et al does not disclose contacting the pre-metallized organic substrate with an aqueous Na_4EDTA solution prior to placing the substrate into the electroless silver bath. However, Arcilesi et al. discloses that an aqueous Na_4EDTA solution treatment prior to electroless plating plastic substrates and after etching and sensitization in a stannous chloride solution acts to accelerate the deposition during the electroless process and make the substrate more receptive to electroless plating, such as

by complexing substantially all of any contaminating reducible metal ions present and extracting any residual tin constituents on the surface of the activated substrate (abstract, column 3 lines 6-45, example 1). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al. to include an acceleration and complexing step using aqueous Na_4EDTA solution as taught by Arcilesi et al. with an expectation that this step will accelerate the electroless deposition and make the substrate more receptive to the plating process.

(2) Gabara et al also does not disclose the cleaning process would be a scouring process. However, Sanders et al teaches a plating process for organic fibers that includes the steps of acid etching, sensitizing in stannous chloride and HCl, and electroless plating (column 5, line 50 through column 6, line 25). The plating can be of silver (column 11, lines 5-10). Sanders et al teaches that prior to the etching, a cleaning process is provided for the fibers where the fibers are cleaned by scouring (column 5, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al to clean by scouring prior to the etching step to provide a desirable cleaning process, because Gabara et al teaches that it is known to clean the fibers prior to etching in a plating process and Sanders et al teaches that a desirable cleaning process for fibers prior to etching in a plating process is by scouring.

Referring to claim 2, Gabara et al. discloses that the substrate is polymeric yarn or fiber (example 3).

Referring to claim 6, Sanders et al. discloses that the scouring comprises washing the substrate an aqueous solution (column 5, lines 60-65).

Referring to claim 7, Gabara et al. discloses that the tin salt is stannous chloride (example 3).

Referring to claim 8, Gabara et al. discloses that the tin solution comprises an inorganic acid, hydrochloric acid (example 3).

Referring to claim 9, Gabara et al. discloses that the silver salt is silver nitrate and the complexing agent is ammonia hydroxide.

Referring to claims 10 and 11, Gabara et al. discloses that the reducing agent is formaldehyde (example 3)

Referring to claim 12, Gabara et al. discloses that the pre-metallization solution omits a water soluble solvent (example 3).

Referring to claim 13, Gabara et al. discloses that the pre-metallization solution does not contain a surfactant (example 3). However, the silver plating solution in example 3 contains a wetting agent. Arcilesi et al. discloses that the aqueous Na_4EDTA solution can contain surfactant but does not have to (column 6, lines 35-45, example 1). As to the wetting agent in the silver plating solution, Arcilesi et al. discloses that after the acceleration treatment an electroless plating process is performed that excludes a wetting agent (example 1). Accordingly, one of ordinary skill in the art would find it obvious that when employing the accelerating step to render the substrate more

receptive to the electroless plating that a surfactant is no longer necessary to help increase the plating rate.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gabara et al. in view of Arcilesi et al. and Sanders et al. in further view of Rheaume (US Patent No. 4,312,913).

Referring to claim 3, Gabara et al. in view of Arcilesi et al. and Sanders et al. disclose all of the features of the claim as discussed above except they do not disclose weaving the fiber into a textile. However, Rheaume teaches that using metallized yarns and weaving them together are useful for heat conduction paths for the efficient transferring of heat from a substrate (abstract). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al. in view of Arcilesi et al. and Sanders et al. to use the metallized yarns as a woven heat transfer device as suggested by Rheaume as this is a suitable end product for such metallized yarns.

8. Claims 1, 2 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabara et al (US 5302415) in view of Arcilesi et al (US 4204013), Sanders et al (US 4716055) and EITHER Zeblisky (US 3960573) OR Japan 63-278506 (hereinafter '506).

Referring to claim 1, Gabara et al. discloses a method for coating an organic substrate such as aramid fibers with metal (column 2, lines 5-20), which can include

cleaning (preparing) the fibers before treatment (column 6, lines 20-30). Gabara et al then teaches etching the fibers by placing them in a sulfuric acid solution (column 3, line 35 through column 4, line 15). To coat the fibers with silver, they can then be sensitized by placing in a solution comprising stannous chloride and inorganic HCL acid (column 5, lines 1-10), then the substrate was placed in a silver salt solution which inherently deposits silver oxide on the organic substrate as no reducing agent is present and the solution further includes ammonium hydroxide as a complexing agent (column 5, lines 1-20 and column 8, lines 40-65), the solution then has a reducing agent added which acts to reduce the silver oxide to metallic silver (column 5, lines 1-20 and column 8, lines 39-64).

(1) Gabara et al does not disclose contacting the pre-metallized organic substrate with an aqueous Na_4EDTA solution prior to placing the substrate into the electroless silver bath. Gabara does disclose that the fibers are first immersed in a aqueous sensitizing solution such as tin chloride/HCl (column 5, lines 5-10). Zeblisky teaches that sensitizing solutions applied to plastics before silver electroless plating are well known to commonly include tin chloride/HCl and palladium (column 2, line 65 through column 3, line 15, column 3, line 65 through column 4, line 5, example 1, and column 11, line 20-25). '506 teaches that when preparing an organic fiber for silver electroless plating, the fiber can first be treated with solutions of tin chloride/HCl and palladium chloride/HCl, thus exposing the fiber to both tin and palladium (see the abstract). Accordingly, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to modify Gabara et al. to further use palladium as well as tin to sensitize the substrate to prepare for silver plating as suggested by EITHER Zeblisky OR '506 with an expectation that this will provide a desirable sensitizing of the substrate for silver plating. Moreover, Arcilesi et al. discloses that an aqueous Na_4EDTA solution treatment prior to electroless plating plastic substrates and after etching and sensitization in a stannous chloride/palladium solution acts to accelerate the deposition during the electroless process and make the substrate more receptive to electroless plating, such as by complexing substantially all of any contaminating reducible metal ions present and extracting any residual tin constituents on the surface of the activated substrate (abstract, column 3 lines 6-45, example 1) and also preventing oxidation of the palladium constituent on the substrate (column 4, lines 50-65). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al. and EITHER Zeblisky OR '506 to include an acceleration and complexing step using aqueous Na_4EDTA solution as taught by Arcilesi et al. with an expectation that this step will accelerate the electroless deposition and make the substrate more receptive to the plating process by treating both the tin and palladium constituents on the surface.

(2) Gabara et al also does not disclose the cleaning process would be a scouring process. However, Sanders et al teaches a plating process for organic fibers that includes the steps of acid etching, sensitizing in stannous chloride and HCl, and electroless plating (column 5, line 50 through column 6, line 25). The plating can be of

silver (column 11, lines 5-10). Sanders et al teaches that prior to the etching, a cleaning process is provided for the fibers where the fibers are cleaned by scouring (column 5, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al to clean by scouring prior to the etching step to provide a desirable cleaning process, because Gabara et al teaches that it is known to clean the fibers prior to etching in a plating process and Sanders et al teaches that a desirable cleaning process for fibers prior to etching in a plating process is by scouring.

Referring to claim 2, Gabara et al. discloses that the substrate is polymeric yarn or fiber (example 3).

Referring to claim 6, Sanders et al. discloses that the scouring comprises washing the substrate an aqueous solution (column 5, lines 60-65).

Referring to claim 7, Gabara et al. discloses that the tin salt is stannous chloride (example 3).

Referring to claim 8, Gabara et al. discloses that the tin solution comprises an inorganic acid, hydrochloric acid (example 3).

Referring to claim 9, Gabara et al. discloses that the silver salt is silver nitrate and the complexing agent is ammonia hydroxide.

Referring to claims 10 and 11, Gabara et al. discloses that the reducing agent is formaldehyde (example 3)

Referring to claim 12, Gabara et al. discloses that the pre-metallization solution omits a water soluble solvent (example 3).

Referring to claim 13, Gabara et al. discloses that the pre-metallization solution does not contain a surfactant (example 3). However, the silver plating solution in example 3 contains a wetting agent. Arcilesi et al. discloses that the aqueous Na_4EDTA solution can contain surfactant but does not have to (column 6, lines 35-45, example 1). As to the wetting agent in the silver plating solution, Arcilesi et al. discloses that after the acceleration treatment an electroless plating process is performed that excludes a wetting agent (example 1). Accordingly, one of ordinary skill in the art would find it obvious that when employing the accelerating step to render the substrate more receptive to the electroless plating that a surfactant is no longer necessary to help increase the plating rate.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gabara et al. in view of Arcilesi et al., Sanders et al. and EITHER Zeblisky OR '506 in further view of Rheaume (US Patent No. 4,312,913).

Referring to claim 3, Gabara et al. in view of Arcilesi et al., Sanders et al. and EITHER Zeblisky OR '506 disclose all of the features of the claim as discussed above except they do not disclose weaving the fiber into a textile. However, Rheaume teaches that using metallized yarns and weaving them together are useful for heat conduction paths for the efficient transferring of heat from a substrate (abstract). Accordingly, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gabara et al. in view of Arcilesi et al., Sanders et al. and EITHER Zeblisky OR '506 to use the metallized yarns as a woven heat transfer device as suggested by Rheaume as this is a suitable end product for such metallized yarns.

Response to Arguments

10. Applicant's arguments filed April 9, 2007 have been fully considered but they are not persuasive.

As to applicant's arguments at pages 8-9 regarding the acid treatment of Gabara et al, the Examiner has reviewed applicant's arguments, however, the rejection is maintained. While Gabara et al provides an acid treatment, this is not prevented by the claims as worded—because the substrate as claimed is simply "an organic substrate" which would be inclusive of the material taught by Gabara et al, and because the process as worded does not prevent such an acid treatment from occurring. Applicant refers to "non-aramide" substrate, but this is not what is claimed.

As to applicant's arguments at pages 9-10 regarding the combination with Sanders et al, the Examiner has reviewed applicant's arguments, however, the rejection is maintained. Gabara et al specifically provides a teaching showing the conventional cleaning the yarn before the etching process, sensitizing or plating (column 6, lines 20-30, for example). The Examiner has cited Sanders et al as showing that that cleaning by scouring is conventional in the art, as discussed in the rejection above. Applicant refers

to the plating effects of scouring from Sanders et al, however, a different fiber than that used by Gabara et al is used. As discussed in MPEP 2123: "The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." In re Heck, 699 F.2d 1331, 1332-33, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)). Sanders et al does describe the scouring as a method for removing "oil, dirt and foreign material" (column 5, lines 60-65) which would clearly be desired by Gabara et al when cleaning.

As to applicant's arguments at pages 10-11 regarding the combination with Arcilesi et al, the Examiner has reviewed applicant's arguments, however, the rejection is maintained. Applicant refers to Arcilesi et al as only disclosing nickel plating, however, the Examiner notes that while the Examples use nickel plating, the specification describes electroless plating in general, describing the use of electroless plating to apply plating "such as copper, nickel or cobalt" and is applied using well known and established practices employing an aqueous solution containing a reducing agent and a reducible salt of the metal to be deposited (see column 4, lines 25-40). As discussed in MPEP 2123: Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). Therefore, Arcilesi et al is directed to electroless plating in general, which as shown by the primary reference to Gabara et al

is well known to include silver plating. As to the aqueous Na_4EDTA solution, Arcilesi indicates that the accelerating solution contains "an aqueous soluble compatible substituted alkylamine" (column 3, lines 15-20) (the alkylamine would be the Na_4EDTA). This indicates that an aqueous Na_4EDTA solution is provided to the extent claimed. The presence of acid as in Arcilesi et al is not prevented by the present claims that do not exclude acid. The Examiner disagrees with applicant's position that silver oxide cannot be formed as claimed. Applicant argues that silver oxide does not form in an acid solution. Applicant has not provided a showing as to this issue, however, even assuming that this is correct, the silver oxide is not applied with the aqueous Na_4EDTA solution. Rather the Na-4 EdTA solution is applied, then later (subsequently) the silver solution is applied. As shown in Arcilesi et al, after the Na_4EDTA containing solution is applied for acceleration, "the parts are again cold water rinsed" before being subjected to electroless plating (see column 7, lines 50-55 and column 4, lines 20-30). This rinsing is not prevented by the claims as worded. Therefore, the acidic nature of the solution is washed off or neutralized before the plating occurs by the process of Arcilesi et al. Finally as to the need for the alkyl amine of Arcilesi et al being due solely to the use of palladium in that method, the Examiner disagrees. Arcilesi clearly states that the alkyl amine solution also acts by complexing substantially all of any contaminating reducible metal ions present and extracting any residual tin constituents on the surface of the activated substrate (see column 3, lines 15-22), and thus would provide desirable benefits on a tin containing activator even without the use of palladium. The Examiner

further notes that she has also provided a rejection that further uses Zeblisky/Japan 63-278506 to show the known use of tin/palladium activators for silver electroless plating.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KATHERINE BAREFORD
PRIMARY EXAMINER